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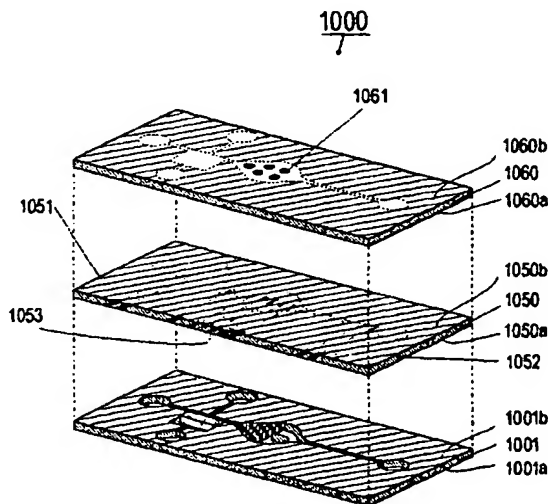
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(54) Title: CAPILLARY PERFUSED BIOREACTORS WITH MULTIPLE CHAMBERS



(57) Abstract: A bioreactor for cultivating living cells in a liquid medium. In one embodiment of the present invention, the bioreactor includes a first substrate having a first surface, an opposite second surface and edges. The bioreactor further includes a second substrate having a first surface and an opposite second surface, defining a cavity with a bottom surface, where the bottom surface is located therebetween the first surface and the second surface. The first surface of the first substrate is received by the second surface of the second substrate to cover the cavity so as to form a channel for receiving cells and a liquid medium. In forming the bioreactor, the channel is sized to allow the growth of a layer of cells on a biocompatible coating layer and a flow of liquid in the channel. The flow of liquid is controlled so as to provide a known shear force to the layer of cells. The flow of liquid can be further controlled so as to provide an environment that simulates a vascular space in the channel.